D301.81:
33/2 √

Combat Crew

strategic air command

★ ★ ★ ★

FEBRUARY 1983

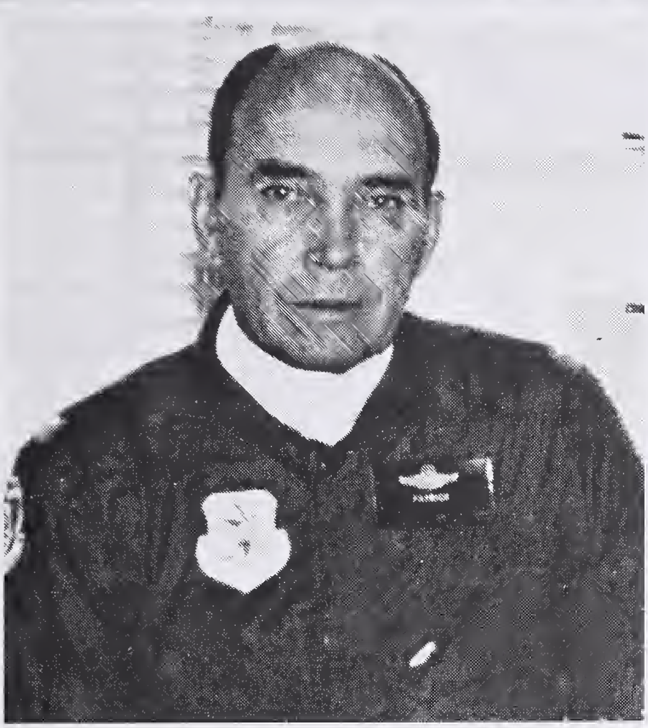
SAFETY in '82

With very few exceptions, the combat crews of this command did a tremendous job for safety in 1982. Although we "stubbed our toe" at the end of the year we did finish with the third best flying mishap rate in the history of the command. This is a tribute to you, your supervisors and commanders who *"encouraged"* and insisted that you do your job the way you are supposed to.

The last three (one in 1981) flying Class A mishaps have been B-52s. We had some growing pains in TA and a couple of close calls but hopefully that has been resolved. Two of the three mishaps were attributed to operations factors with direct aircrew involvement. In spite of other influences they could have been prevented.

We have some engine problems in the KC-10, some electrical wiring concerns in the 135 series aircraft and continue to experience too many UFM (uncommanded flight control maneuvers) in the FB-111 fleet. We view the KC-10 and 135 problems as short term. We are encouraged in the FB-111 area by the recent formulation of a blue ribbon panel chaired by a general officer to accelerate resolution of the flight control problems in that aircraft.

On the missile side, 1982 was a banner year for the command Weapons Safety Program. There were no operational Class A or B missile mishaps. Additionally, Class C missile mishaps were reduced by 22% during this time frame. Evaluation of the three Class A Follow-on Operational Test and Evaluation missile mishaps have resulted in software and procedural changes which will enhance future weapon system operations. Increased nuclear surety awareness resulted in the reporting of 43% more Dull Sword reports during CY 1982. These additional reports aid immeasurably in identifying and correcting unsafe conditions



Colonel Richard A. Patrick Director of Safety, SAC

that occur during during our nuclear weapons operations. The men and women responsible for the alert commitment of this command's SRAM, ALCM, ICBM and nuclear assets are to be commended for their outstanding support. Maintenance and operations personnel, alike, can take pride in these accomplishments.

The Weapons Safety Program is still faced with many challenges. The deactivation of the Titan II and acquisition of the Air Launch Cruise Missile are two systems which will continue to receive high level attention. Your conscientious daily efforts are required to insure that these vital programs are completed without incident.

We in safety salute you the crews — the final link in most mishap sequences. We don't know how many you saved us or how many we helped prevent but we do know that together we can be effective in the preservation of our most critical resource, you.

D301.81:33/2

Combat Crew

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ON OUR COVER

Charles Lindbergh's 1927 flying feat stunned the world. But was Lindy really just "lucky?" Turn to page four to find out.

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COMBAT CREW is an internal publication of the Strategic Air Command with the sole purpose of promoting safety. The contents of this magazine are informative and not to be considered as directive in nature. Facts, testimony and conclusions of all mishaps printed herein may not be construed as incrimination under Article 31 of the Uniform Code of Military Justice. All names, dates and places used in conjunction with mishap stories are fictious. Written permission must be obtained from Headquarters, Strategic Air Command, before any material may be reprinted by other than U.S. Air Force organizations. Use of funds for printing this publication has been approved by Hq. USAF, Distribution FX, controlled by IGFC, SAC units submit distribution requests through local PDO. Reader to copy ratio 9:1.

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DEPARTMENT OF THE AIR FORCE

"Lucky" Lindy?

Maj Mike Howe
55 SRW, Offutt AFB

He was a quiet, unassuming young man from a prominent Minnesota family. Seemingly he had *"misspent"* his youth as a barn stormer, stunt parachutist, and air-mail pilot. His most recent employment was with Robertson's Airline of Saint Louis. His shoestring venture was sponsored by a group of Saint Louis businessmen and in their honor he had named his humble craft. She was a gentle creature of linen and spruce he called simply, *"The Spirit of Saint Louis"*. The Spirit of Saint Louis had been built by a small San Diego, California concern, Ryan Aircraft, best known for its reliable mail planes. Even for its day, his plane was not particularly sophisticated. Most of us have seen the old newsreel movies of him coaxing his overload Ryan, NX-211, from a rain-soaked Long Island field. We are familiar with the thirty three hours he spent challenging the treacherous skies above the North Atlantic, fighting unimaginable fatigue, and conquering near insurmountable odds. When he landed at Le Bourget, he established the legend that has inspired three generations of pilots. Lindbergh's feat was so dangerous and required such skill that in the fifty years since, no one has replicated his New York to Paris flight.

He was courageous and unimaginably skillful, but what kind of pilot was he? Was he Lucky Lindy the flying fool, or was he the calculating professional, a prototype of the ideal modern aviator? A few years ago I had the unique opportunity to hear a first hand account of Lindbergh's flying ability from a man whose aviation credentials are themselves impeccable.

A boyish Charles Lindbergh poses for photographers after landing at Curtiss Field, Long Island.

Jim is retired now, but he had a career any officer would envy. A fighter pilot during World War II, he began flying combat in P-47's and P-51's. After the war he found his way into flight test at Wright-Patterson when it was commanded by the legendary General Al Boyd. Among his contemporaries were men such as Charles Yeager and Bob Hoover. He was at Edwards during the *"Right Stuff"* era sharing the skies with Bob White, Neil Armstrong, and Scott Crossfield. He flew the *"Thud"* at a time and in a place when the words *"Route Pack Six"* brought a knot to the stomach and a chill to the heart.

Our visit with Jim and Emily had been for me, great times and terrific stories. During one cool, quiet evening after a delicious steak and first rate Bordeaux, Jim and I were talking on the patio. The stillness of the evening suddenly seemed punctuated when Jim quietly asked me; "Did I ever tell you about the time I saw Lindbergh fly?" My gasp must have been audible before I blurted, "No, but please do".

"Well," he began, "the war was over and I was stationed at Clark Field in the Philippines.

New York school children spell out Lindbergh.

It was about late '46 or '47. Demobilization had taken a heavy toll on the Air Force before someone realized we were needed in peacetime, so we started rebuilding. The wartime budgetary largness had definitely ended, so efficiency was the byword in our build-up. For this reason, we could not afford to be the same bunch of 19 and 20 year old wild-assed kids we were during the war. Professionalism was demanded.

One morning we were summoned to the briefing room. After the old man had ordered us to take our seats, he told us that Col Lindbergh had arrived and would be demonstrating how to fly the P-51. Of course it would take a man of his stature to tell any of us anything about flying the '51. Anyway, we went out to the ramp where Lindbergh was waiting for us by one of our airplanes. I guess maintenance had worked it over, but the *"chosen ship"* looked to me like all the others assigned to our group. As we gathered around, Col Lindbergh climbed on the wing. We immediately recognized the face as the same one we had seen a thousand times in newspapers, magazines, and newsreels; a little fuller and a receding hairline, but the same face. We quickly quieted as the great man began his short speech.

"Gentlemen, as you know, for optimum performance the P-51 should take off at a near three point attitude with the tail wheel slightly raised and land in the full three point attitude. In the environment in which you operate, this technique of landing and takeoff is all the more important. Today, I will demonstrate these takeoff and landing techniques. Further, I want to emphasize to you the importance of procedural flying. If you don't use a checklist you still need a systematic approach to your flying."

With that he turned and swung his legs over the canopy rail and with the help of a crewchief, strapped in. During the World War II era and after, checklists were not what they are today. Most of us truly kicked the tires and took off. In spite of his speech, we were somewhat startled when we saw Lindbergh's head turn slowly and methodically from the extreme left of the

Special Medal of the City of New York.

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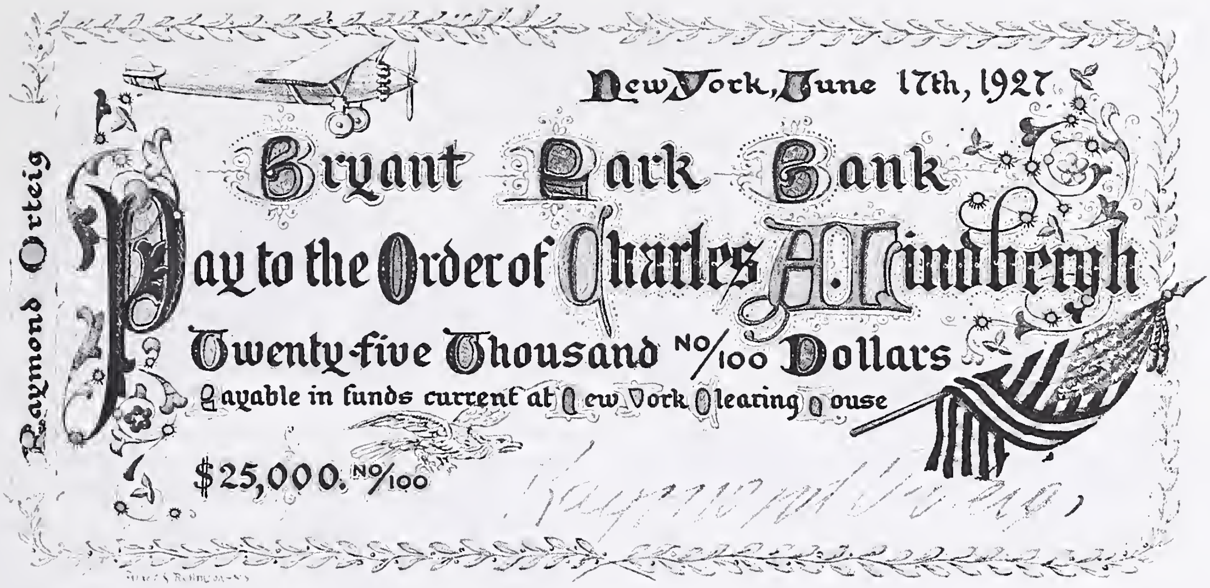


New York, June 17th, 1927

Bryant Park Bank

Pay to the Order of Charles A. Lindbergh

Twenty-five Thousand No/100 Dollars

Payable in funds current at New York Clearing House

$25,000.No/100

Raymond Orteig

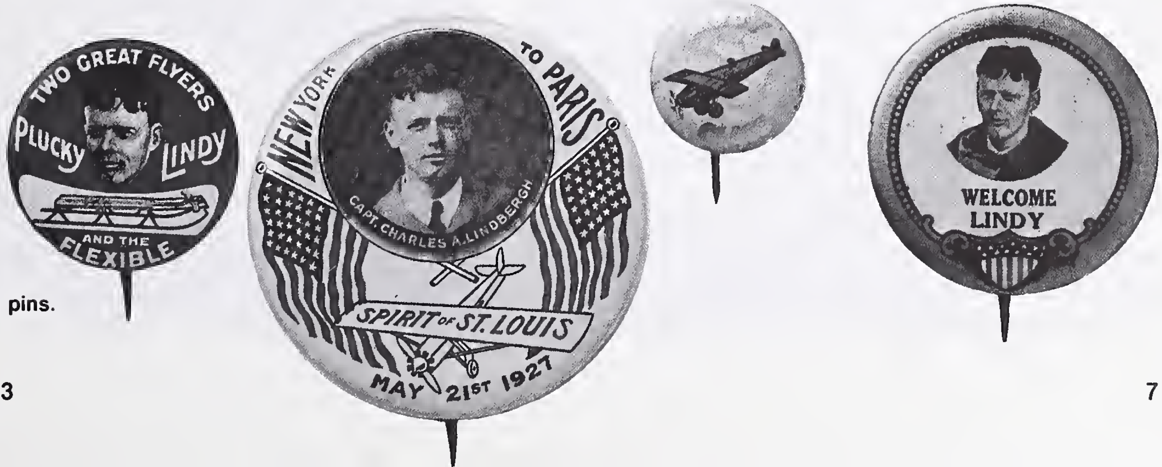
Raymond Orteig

Hand-lettered check for the Orteig Prize.

cockpit to the extreme right apparently doing a cockpit check. It seemed that he took a couple of minutes, but then again we were impatient to see some fancy flying.

Like most high compression engines, the old Merlin was a cold natured beast and very hard to start even for the best. We watched as Lindy signaled his readiness to start and hit the start switch. I've never seen anything like it. The prop had only swung through half an arc when the engine fired, came to life, and was soon ticking-over with the quiet authority only a Merlin has. Again the head movements as he apparently checked the engine instruments and started what looked like a pre-takeoff check. He smoothly advanced power and taxied to the take-off area. Again head motions as he made a last chance check. Then he applied power so the engine never considered coughing and released brakes. After a minimum ground roll, his plane lightly lifted off, from a near three point attitude. Gear up, flaps up, and an absolutely oily pull-up to what we now call a closed pattern. On down wind, although I know it was impossible, I swear I could see his head move as he did a prelanding check. Then, gear down, flaps down and a greasy decending turn from the perch to short final. Then he smoothly landed in the first usable foot of runway at minimum speed and in a three point attitude. Again the smooth power advance, the same near three point lift off, gear up, flaps up, the same oily pull up, a pre-landing check, gear down, flaps down, the same greasy final turn and the same three point touch down at the same place. He did this five times, each pattern identical to the first, each equally perfect. Finally, he full-stopped it and taxied in. He unstrapped, stepped out on to the wing and asked if there were any questions. There were none, his flying had said it all."

It is tempting to moralize on this story, but I feel for each pilot there is a different meaning. For me it answers my questions, What kind of pilot was Lindbergh? *Smooth, methodical, and safe.*



Lindbergh lapel pins.

SURVIVAL CHECKLIST!

Capt Kim L. Zetterberg
904AREFS, Mather AFB

It's 0400 hrs. but none of the crew seems to mind. Scheduled bomb runs, air refueling, and the other navigational tasks of the past nine hours are but a memory now. Without warning during climbout, a loud explosion rips through the cockpit, rapidly depressurizing the aircraft. The plane yaws sharply to the left and the pilots respond, struggling to keep her aloft. Their efforts failing, the aircraft commander calls for the crash landing checklist. All too soon the aircraft comes down, tearing its way through the trees before coming to rest in a mountain streambed. The silence of the night closes in once more.

For a combat crewmember, those first few minutes following a crash landing or bailout are crucial. Selection of the wrong alternatives or having none in mind could mean the difference between life and death. As studies have shown that few people can think clearly during an unexpected emergency, the professional crewmember has an emergency plan, such as the one suggested below, ready for use at all times. If an emergency should occur, the plan can be put into action immediately without the need for devising one, a step at a time. Needless to say, this "*survival game plan*" should be reviewed routinely before flying to keep selected procedures fresh in one's mind, so let's get back to our B-52 crew and their plight. For a more personal touch, how about you being our radar navigator for the remainder of the scenario?

Coming around moments after impact, you see that everyone appears to be alive, and make the first key decision as a crew by evacuating yourselves and as much emergency gear as possible from the aircraft without wasting a second. The important point here is to clear the vicinity of the crash site in a minimum amount of time, and to remain a safe distance away until the engines have cooled and the spilled fuel has evaporated. Failure to follow this simple rule has cost several crewmembers their lives.

Clear of the aircraft, attention now turns to a check for injuries. Those least hurt and most ambulatory do a fine job giving first aid as required, and making the injured as comfortable as possible. Fortunately the lack of a fire following the crash permitted the removal of casualties from the aircraft without aggravating their injuries, especially of the co-pilot who appears to have suffered some type of back injury. Familiarity with the location of the aircraft's first aid equipment and having kept current on those sometimes dry refresher courses pays big dividends now!

At this point in time the initial surge of adrenalin should just about be depleted. As environmental considerations and immediate rescue possibilities pose no additional demands, the next few moments are for relaxation. Sit back and take a long drink of water (hot fluids if it's cold out). Plenty of rest is in order until you and your fellow crewmembers feel you are over the shock of the crash. Making the decision to put off any long-range planning and extensive work until later when cooler heads will prevail will be much to your benefit.

With the crew rested-which may take from an hour to half a day, depending on your reaction to the crash plan your next move. Whether to remain at the scene of the crash (or bailout) and wait for rescue, or to go for help will depend on several factors. Except for areas of dense foliage (i.e. tropical rain forest areas), the best plan is to stay where you are unless you are certain where help is and are confident that you can reach it before rescue units could get you. Those who have bailed out of their plane should proceed to the downed aircraft if it is within easy walking distance as it is more easily seen from the air than an individual or group (remember that combat priorities will probably dictate otherwise).

Conversely, if the crew decides to wait for rescue, prepare all signalling devices for use. Construct the appropriate ICAO ground-air emergency code signals, and if deciding to move on, leave a note giving your destination and route for ground parties in case the trek has to be aborted.

With the sun now coming up in the first light of day, the decision to wait things out is made. The Senior Ranking Officer (SRO), who happens to be the aircraft commander this time, takes charge of the operation, and assigns everyone specific responsibilities. It's evident that his Fairchild and Homestead training are coming back to him, as all the food and supplies are pooled for use of a share-and-share-alike basis. Adequate shelter from the elements soon begins to take form. Fuel is collected and stockpiled (at least one day's supply) while other members of the crew check out the area for water and animal and plant foods which could provide subsistence. With the camp organized, all sit back to wait, conserving energy for when it will be most needed — the rescue. Signal equipment is handy for action at a moment's notice. Taking it easy is the key here. It's important not to run risks that could result in injury (or further injury as the case may be). Rescue is always easier with crewmembers who are in good health and all in one piece.

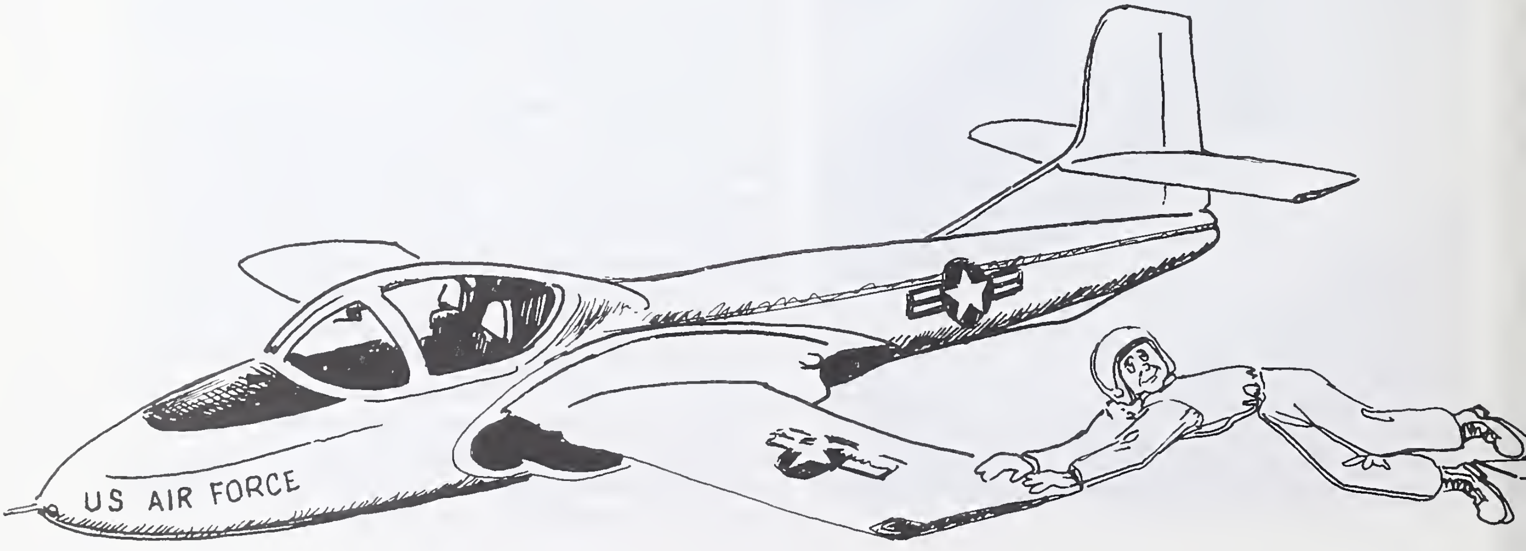
The sound of helicopter rotors is heard, and at once signalling is under way. "Jolly Green" appears over the ridge, and takes a beeline to your position along with his "playmate." Following the instructions of the rescuers everyone is soon aboard the choppers for the ride home, sipping on a "cool one," lucky to still be around for the next mission. Stacking the odds in your favor by devising a survival checklist and planning for the eventuality of having to use it really came through this time. It has for many others who made it through similar situations. Getting back to reality, when was the last time you and your crew checked your survival checklist for currency?

ACE TRANSITION

Capt Louis J. Leli,
916th AREFS, Travis AFB

When the ops officer called me at the ACE office to tell me that I would begin upgrading in a week, I definitely had mixed emotions. After two years of recomputing takeoff data and tolerating unimaginative copilot jokes, I was finally to become an AC. In return for all that extra *"AC pay,"* though, I would have to make certain sacrifices. My most painful tradeoff would be resigning from the world's greatest aero club: The ACE program. As the ops officer talked about upgrade, I realized that I was departing on my last cross country. My flying time would soon be cut by 60% and I would no longer be able to scare myself with rolls, spins, etc. ACE had been successful, however, by contributing tremendously to my professional knowledge. Besides providing me with a social life that spanned the western United States, ACE had given me the background and experience to fly and command the crew of a KC-135. Despite the many advantages, however, numerous hours in the T-37 had given me a certain perspective that sometimes hindered my transition from pilot in command of a 6000 pound Cessna to aircraft commander of a 250,000 pound Boeing.

As opposed to the tanker, the T-37 is undeniably a one-man aircraft, even nonrated UPT students fly it solo. In the tweet, one pilot can easily maintain aircraft control while also running checklists, making radio calls, navigating, etc. As a result, when flying ACE I kept my briefings extremely short. I didn't need to brief my fellow pilot to accomplish tasks that I could do myself. The tanker, on the other hand, is a two pilot aircraft. Section 5 of the Dash 1 states, *"A pilot and copilot constitute the minimum crew required for a normal nontactical flight."* Flying the tanker simply involves more tasks than one pilot can perform safely. As a result, the former ACE pilot now flying as an AC must take full advantage of that human resource sitting at his right. As AC then, ensure that the copilot knows exactly what you, expect. To accomplish this, have a thorough standard briefing. Thorough, since any item, no matter how insignificant on the ground, may be critical when airborne. Standard, so that when flying with a copilot other than your own, no item will be overlooked. In the tweet we normally briefed only emergencies. In the tanker, however, be sure to include all aspects of



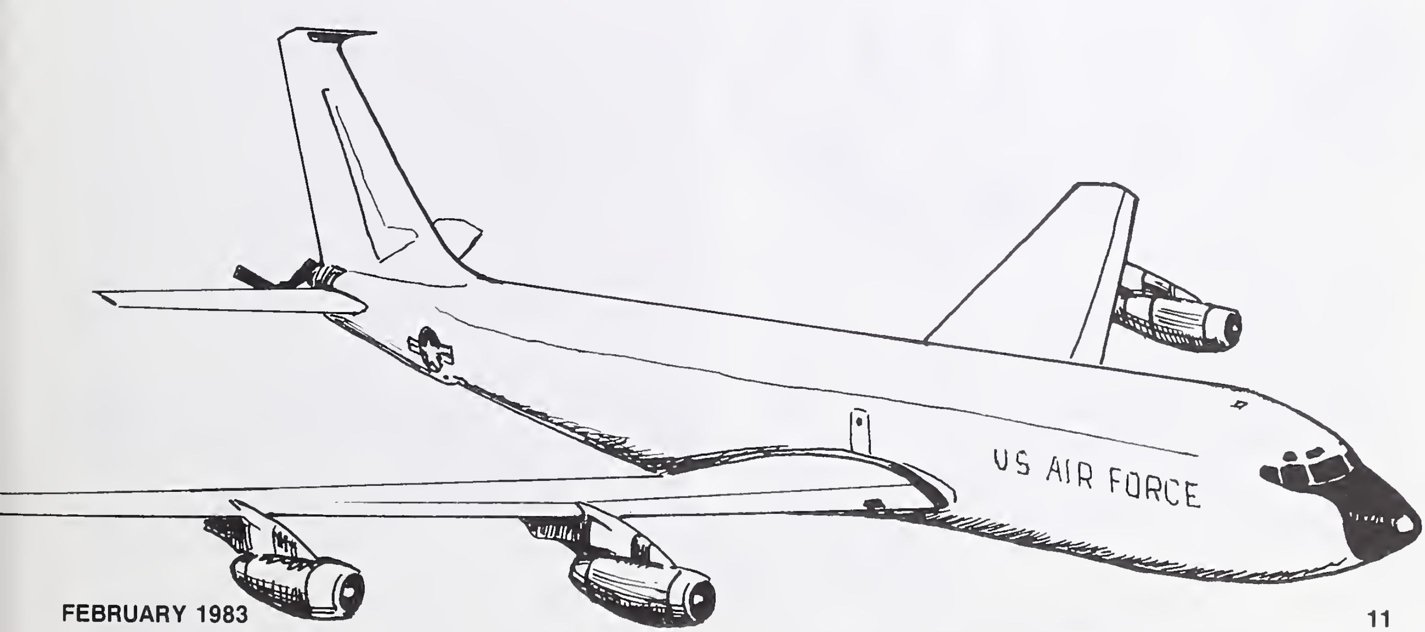
flight, from who will make the departure call to how you would like the copilot to post landing data.

Data is, of course, another major difference between flying the tweet and tanker. In the tweet, we almost always rotate at 65 knots, tanker data is much more elaborate. Besides the required data, ensure that your copilot knows what additional data you want immediately available, for example, hot brakes speed, max tailwind, or holding speed. In addition, know how to make those corrections for gust and calm winds in order to back up the copilot should he get rushed at the end of the runway. Besides taking full advantage of the copilot, also take advantage of his instrumentation. Use his HSI to cross-tune radials, for instance. Remember, you are no longer single VOR only.

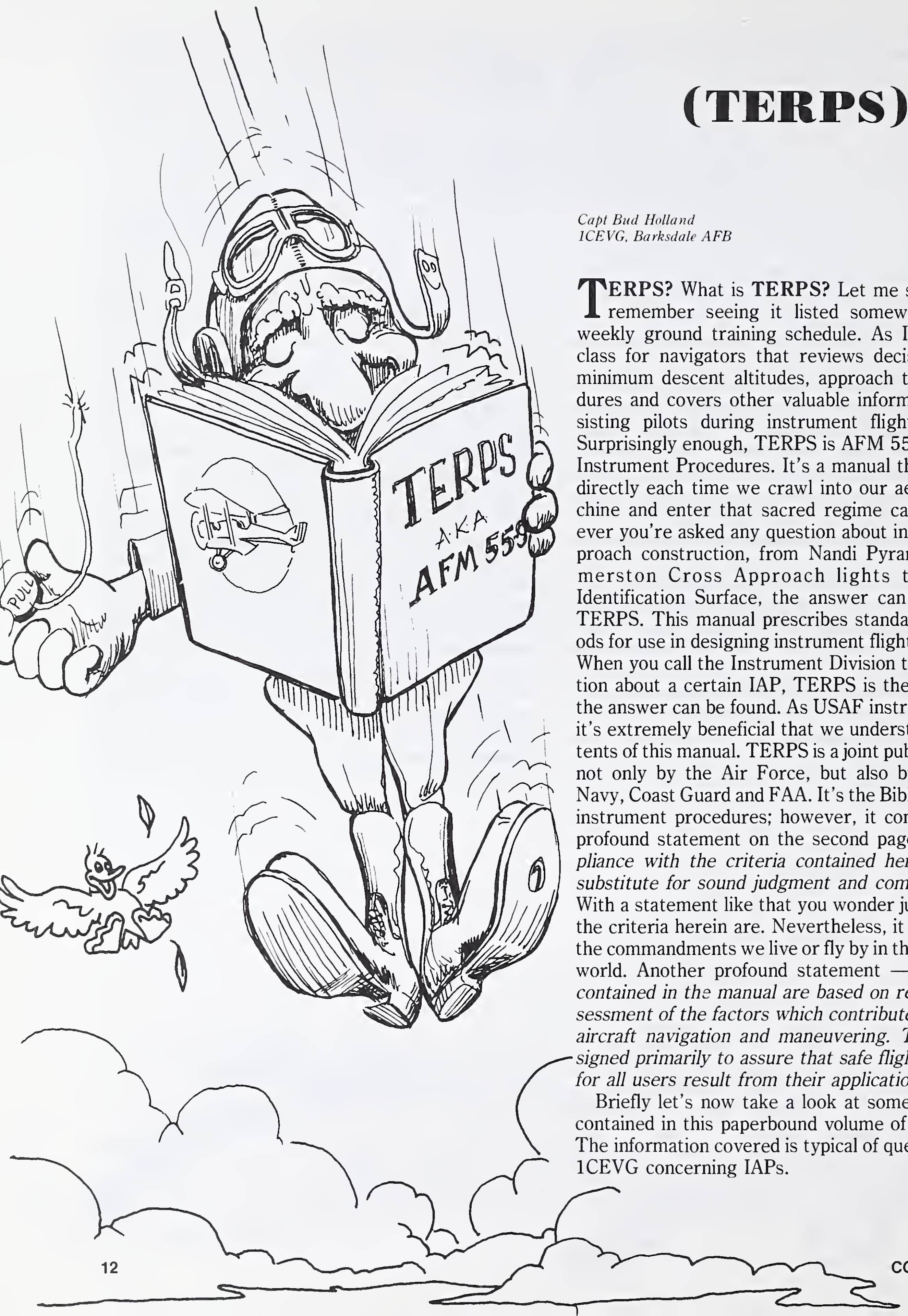
Another advantage provided the AC and not the ACE pilot is the assistance of a navigator operating airborne radar. Any tweet pilot who has confronted thunderstorms knows what an asset a navigator and his radar can be. The APN-59 may not be state of the art, but it beats no radar at all. As an AC, if there is any weather nearby, insure that the nav checks his radar scope and keeps you informed. Should the nav paint some storms, remember that unlike the tweet, the tanker is not limited to FL250. You may have the capability to go over building thunderstorms. Better yet, the tanker provides enough fuel to circumvent any thunderstorms. The tweet can provide tense moments when, after taking-off minimum fuel, the pilot discovers he must also divert around thunderstorms. In the tanker, fuel is almost always available for circumventing storms.

Finally, as opposed to the tweet, the tanker is not the pilot's to take wherever he wants to go. In ACE, we could fly anywhere that serviced fuel and oxygen. If we changed our itinerary, we could just call the ACE SOF at the end of the day and tell him where we were. Of course as an AC, that freedom no longer exists. The AC needs to keep command post advised when events vary from planned, this includes maintenance delays during preflight, for example, or overflying scheduled time. This is not to imply that an AC should allow the command post to make his decisions for him. Copilots fly ACE to develop judgment. As an AC, use that judgment to make sound decisions and then advise command post of your intentions. If the DO has different ideas, he will let you know. As with your crewmembers, keep in mind that command post can also provide valuable expertise. During an emergency for example, the command post can convene a hotel conference which may raise points that have been overlooked by crewmembers busy flying the airplane. In such a case, however, be sure to give command post plenty of time to start solving the problem. Inbound from the FAF is too late.

Obviously the differences between flying ACE and flying as an AC extend beyond a more comfortable seat and a coffee pot on board. Although flying the tanker is extremely more complex than flying the tweet, the same sound flying skills and judgment are required for safety in either aircraft. As an aircraft commander, however, and not just the pilot, the man in the left seat now has the advantage of a qualified crew operating more sophisticated equipment to ensure safe flight. Having taken full advantage of all available resources, the former ACE copilot turned AC can now also take advantage of the coffee pot on board.



(TERPS)



Capt Bud Holland
1CEVG, Barksdale AFB

TERPS? What is **TERPS?** Let me see, I think I remember seeing it listed somewhere on the weekly ground training schedule. As I recall it's a class for navigators that reviews decision heights, minimum descent altitudes, approach timing procedures and covers other valuable information for assisting pilots during instrument flight conditions. Surprisingly enough, TERPS is AFM 55-9, Terminal Instrument Procedures. It's a manual that affects us directly each time we crawl into our aerospace machine and enter that sacred regime called flight. If ever you're asked any question about instrument approach construction, from Nandi Pyramid and Palmerston Cross Approach lights to Obstacle Identification Surface, the answer can be found in TERPS. This manual prescribes standardized methods for use in designing instrument flight procedures. When you call the Instrument Division to ask a question about a certain IAP, TERPS is the book where the answer can be found. As USAF instrument pilots, it's extremely beneficial that we understand the contents of this manual. TERPS is a joint publication used not only by the Air Force, but also by the Army, Navy, Coast Guard and FAA. It's the Bible of terminal instrument procedures; however, it contains a very profound statement on the second page ... *"Compliance with the criteria contained herein is not a substitute for sound judgment and common sense."* With a statement like that you wonder just how good the criteria herein are. Nevertheless, it does contain the commandments we live or fly by in the instrument world. Another profound statement — *"Standards contained in the manual are based on reasonable assessment of the factors which contribute to errors in aircraft navigation and maneuvering. They are designed primarily to assure that safe flight operations for all users result from their applications."*

Briefly let's now take a look at some information contained in this paperbound volume of information. The information covered is typical of questions asked 1CEVG concerning IAPs.

TERMINAL INSTRUMENT PROCEDURES

Nonstandard Procedures — it is not a substandard procedure, but is one which has been approached after a special study of the local problem has demonstrated that no derogation of safety is involved. Military procedures which deviate from standards because of operational necessity and which an equivalent level of safety is not achieved shall include a cautionary note to identify the hazard and be marked *"not for civil use."*

Straight-in Procedure Identification — procedures which meet criteria for authorization of straight-in landing minima shall be identified by the type of navigational aids which provide guidance and the runway to which the final approach course is aligned; i.e., ILS Rwy 18R, TACAN Rwy 36, VOR/DME Rwy 6. A slash (/) shall indicate that more than one type of equipment must be used to execute the final approach; i.e., VOR/DME, ILS/DME. When procedures are combined, the word *"or"* shall indicate either type of equipment may be used to execute the final approach. When the same final approach guidance is used to the runway, the procedures shall be identified as follows: TACAN 2 Rwy 36, VOR 1 Rwy 18, etc.

Circling Procedure Identification — when a procedure does not meet criteria for straight-in landing minimums authorizations, it shall be identified by the type of navigational aid which provides final approach guidance and alphabetical suffix. The first procedure formulated shall be the suffix **"A"** even though there may be no intention to formulate additional procedures. Additional procedures **"B" "C"**, etc., may be used. To be classified as a straight-in approach, the angle of convergence of the final approach course and the extended runway centerline shall not exceed 30 degrees.

Approach Categories — aircraft performance differences have a direct effect on the airspace and visibility needed to perform certain maneuvers, such as circle to land, turning missed approaches, final alignment correction to land, and descent. Aircraft categories have letter designators of A, B, C, D, and E. Categories are divided according to aircraft speed. The speeds are based on 1.3 times the stall speed in the landing configuration at maximum gross landing weight. The approach category operating characteristics shall be used to determine turning radii, minimums, and obstacle clearance areas for circling and missed approach.

Procedure Construction — an instrument approach procedure may have four separate segments. They are the initial, the intermediate, the final, and the missed approach segments. In addition, an area for circling the airport under visual conditions shall be considered. In constructing the procedure, the final approach course should be identified first because it is the least flexible and most critical of all the segments.

Visual Descent Point (VDP) — the visual portion of any instrument approach begins at the VDP and ends at the runway threshold. The VDP is a defined point on the final approach course of a nonprecision straight-in approach procedure from which normal descent from the MDA to the runway touchdown point may be commenced, provided visual reference is established. The VDP shall be identified by an approved navigational fix. It shall be located at the point where the lowest VASI is not installed, the VDP will be located at the point on the final approach course at the MDA where a descent gradient to the threshold of 200-400 feet per NM commences. The VDP is centered on the extended runway centerline.

We have just looked at some information covered in TERPS that affects us every time we fly. This is just the tip of the iceberg. Basically, everything you ever wanted to know about terminal instrument procedures is contained in this manual. Hopefully we've got you interested enough in this *"little known about"* and *"seldom used"* book to do some research of your own. Any questions you have on why and how an instrument approach is designed a certain way is located in TERPS. Realize that TERPS directly impacts you as an instrument pilot and it is certainly not just a class for navigators.

LIFE AFTER ALERTS

Capt Pat Fornes
4315 CCTS/CMMT, Vandenberg AFB

Remember when field grade officers used to say: *"You'll look back on your crew duty as the best time in your career?"* Now, a year after my last alert as a Titan missile crew commander, I find I agree with that statement for two reasons. First, I served on the front line of our nation's deterrent force. No matter how tedious the job, I was never very far from a very real reminder of why I was on alert. Each alert I could walk into the silo and see deterrence. My crew time was also the *"best time"* because of the many varied opportunities to improve my qualifications as an Air Force professional. I'd like to focus on some of the opportunities available to crewmembers.

Start early and establish goals for yourself. I suggest these three be among them: professional military education; continued civilian education; and staff skill development. Most people will agree that professional military education is paramount. For junior officers that means Squadron Officer School by correspondence and in residence when selected. For enlisted crewmembers, it means completing your career development courses (CDCs). Prior to making sergeant, talk to your First Sergeant about attending Professional Military Education (PME) Course 1. Make plans to attend PME 2 once you've sewed on your sergeant's stripes. Additional educational goals should include advancing your level of civilian education. Officers, get your masters. There are masters programs available at every missile wing. Take advantage of them. Titan enlisted crewmembers should also advance their educational levels. You can get an Associate of Arts or Science degree during your first four years on crew. Do it. Remember to apply for credits under the Community College of the Air Force. For all crewmembers, a trip to the education office is time well spent. Believe me, it will never be easier to increase your civilian and professional military education than while you are a missile crewmember.

Now that you've got a good handle on two of the goals you should establish, let's look at the third one; developing and refining staff skills. For

both officer and enlisted crewmembers, this is preparing for your next job. You won't be on crew for all of your career. You have to be knowledgeable, skilled, and ready for a staff position.

Improving your staff skills is your most challenging goal. Seek advice on how to improve your written and verbal communications. Talk to your flight chief, sector commander, and crew commander. Use their experience and knowledge to improve your skills. Additionally, read the Air University publication *"Tongue and Quill,"* it's an excellent guide. Practice your verbal communication skills. Many wings have a speakers' bureau which is operated by public affairs. They can give you the opportunity to address civic groups about the Air Force. When you're home on leave, ask to speak to your high school, college, or civic organizations. Public speaking can only be learned by speaking publicly. It takes courage to begin but, with practice, it can become second nature.

Writing skills are mandatory if you're to be a good staff officer or NCO. There are several ways to improve your writing. For example, think back to the last time you discovered a better way to do something. Instead of just making a verbal recommendation, write a point paper on the idea. Point out the advantages of your suggestion and the research you've done. Fill out an AF Form 1000 written in clear, concise terms, convincing the reader that it's the best idea to date. Even if the idea isn't adopted, you'll come out way ahead.

Another way to refine your writing skills is to author an article for this publication. A Titan II missile facilities technician might write an article titled *"Daily Shift Verification and the Missile Crew Professional."* Use your weapon system expertise to improve your skills as a writer. Opportunities to improve your staff skills are everywhere, use them.

After four years on missile crew you'll have hundreds of alert tours to look back on. You'll have experience, knowledge, and skills which you can put to use as you move on to *"bigger and better"* things. Perhaps then, you too, will say crew duty *"was the best time in your career."*

SAFETY IS AN ATTITUDE

TSgt Larry L. Graves
390th SMW, Davis-Monthan AFB

Over and over again, we hear the phrases "I don't like his/your attitude," or "You've got a good attitude — and that's what we need more of around here," and "Unless you change your attitude, you're going to find yourself on the outside looking in." The latter phrase was my father's favorite words of wisdom. **ATTITUDE.**What is it, or more specifically, how do we develop a good **safety** attitude?

The dictionary defines attitude as a state of mind or feeling with regard to some manner. The *"Supervisors Guide to Human Relations,"* National Safety Council, defines safety attitude as a readiness to respond effectively and safely, particularly in tension producing situations. You, the supervisor, play a very large part in spawning and forming the safety attitude of your personnel. However, before you can develop this attitude in your personnel, you must first look at yourself. How do you view your safety responsibilities?

The following pairs of statements were taken from the above mentioned *"Supervisors Guide to Human Relations."* These statements were used in a survey to discover if there was a correlation between supervisor attitude and mishaps incurred.

- At times, safety rules cannot be followed to the letter if a foreman wants to stay on as boss. *A SUPERVISOR WHO DOES NOT ENFORCE SAFETY SHOULD BE DEMOTED.*
- Because job pressures make it impossible to take all necessary safety precautions, do what you can and then forget it. *I WOULD PLACE SAFETY AT THE TOP OF ANY LIST OF SUPERVISORY RESPONSIBILITIES.*
- Safety is a waste of supervisory time. *SAFETY GIVES US A STANDARD OF ENDURANCE BEYOND WHICH WE, OR OUR MEN, MAY NOT GO.*

Which statement in each pair would you have chosen? The survey showed that there is a direct correlation between how the supervisors answered these and other questions, and the number of mishaps experienced by his/her workers. Negative attitudes toward safety resulted in a higher mishap record. How does your mishap record compare to the mishap record of other supervisors in your organization?

Statistics have shown that most employees are injured on the job during their first six months. This record is attributed to the lack of training or the attitude of "mission first, safety if you have time." AFR 127-12, Paragraph 15c, states that non-supervisory personnel training is the best guide for developing a safety attitude that will last. There are eight items you should be certain are covered in sufficient length and depth to ensure that individuals are knowledgeable in job safety.

1. Hazards of the job tasks they will perform. You've worked at it longer than they have, so let them know. Cite mishaps that have happened because others did not follow prescribed safety standards.
2. Hazards of the work areas. Show them the blind corners where they could run into someone, and include where to shut-off the power if the need should arise.
3. OSHA and AFOSH requirements that apply to their jobs and work place. If you aren't there and a question concerning safety arises, are you sure your personnel could locate the regulations that cover the procedures? *OR WILL THEY TRUST LUCK?*
4. Personnel protective equipment they will need and how to use it. Don't just demonstrate how to use the equipment. *MAKE THEM DO IT!* — someday their life may depend on it.

5. Location and use of emergency equipment. In a chemical plant, an individual was splashed with acid. He ran by a shower which was just outside the door, and continued running to the exit at the end of the third floor (passing two more showers). The individual then ran as fast as he could down two flight of stairs outside the building and crossed several hundred yards between his building and another building. He then bounded up two flight of stairs and down the corridor (passing two more showers) and finally reached the third shower. He stepped under this shower and operated it. His previous supervisor had conducted monthly drills for such an incident. His present supervisor had not gotten around to training him, so naturally, he went to where he *KNEW* there was a shower. *WHAT WOULD YOUR PERSONNEL DO?*

6. Emergency procedures that apply to their job and workplace, including building evacuation procedures and location of fire equipment. Could your personnel safely evacuate the areas they work in? How many even know where the closest fire extinguisher and alarm is located? How many even know how to use the fire extinguisher and fire alarm?

7. How to identify and report hazards. Do your personnel come to you when they think there is a problem, or do they think you don't care?

8. How to report work-related injuries and illnesses. Do your personnel call you (irregardless of time, weather, on- or off-duty) when they experience a mishap? Remember, even if they are injured while off duty, you may have to shift work schedules or assist his/her family until the individual returns to work.

These are only the basic requirements. If you feel more could be added, then do so. Remember, if you instill an attitude in your subordinates that their personal safety is of great importance to you, you will have spawned that safety attitude.

PEOPLE ARE YOUR MOST IMPORTANT ASSET, THEIR SAFETY: YOUR GREATEST RESPONSIBILITY!

AIRCRAFT MAINTENANCE

SSgt Malcolm S. Holmes, 42d FMS, Loring AFB, has been selected as the SAC Maintenance Airman of the Month. Sgt Holmes, NCOIC of the QEC Kit Section, has consistently provided outstanding supervisory and technical leadership which resulted in a marginal performing section being transformed into an outstanding one. The SAC IG Inspector specifically recognized Sgt Holmes in a recent ORI report for his exceptional management and control techniques in reducing man-hours and increasing the total production time capability of his section and the Propulsion Branch.

MISSILE MAINTENANCE

SSgt William P. Frey, 351st SMW, Whiteman AFB, is SAC ICBM Maintenance Airman of the Month. The missile maintenance team headed by Sgt Frey distinguished themselves during their initial task evaluation by Wing QC evaluators with four Highly Qualified and six Qualified grades, the best effort by a new team in recent years. Sgt Frey personally received two Special Achievement Awards, one for outstanding training performance, the first ever awarded to a team chief, and one for being the first missile maintenance team to perform a pushbutton start-up of an EWO missile.

PROFESSIONAL PERFORMERS

FLYING CREW

Crew E32: Maj Bob Weis, IP; Capt Dave Hokaj, P; 1Lt John Reynolds, N; Amn Quinn Tanke, G; Capt Mark Austin, RN; Capt Danny Walters, EWO; and 1Lt Mark Simmons, CP, 319th BMW, are SAC's Flying Crew of the Month. During a climb to cruise altitude on a recent flight the number five engine's second stage compressor fan blade sheared off and tore through the lower wrap cowl, damaging some of the cowling fasteners. The wrap cowl broke loose from the aircraft followed soon after by the ring cowl. Loss of the hydraulic system driven by the number five engine meant the landing would be made without crosswind crab in a 12-knot direct crosswind. Crew E-32 rose to the challenge and brought the aircraft to a safe stop on the runway with room to spare.

MISSILE CREW

The 351st SMW Crew R-135: 1Lt Donald S. Caccamise, MCCC, and 2Lt Edwin J. G. Ramos-Echandi, DMCCC, is SAC Missile Crew of the Month. On two separate alerts Crew R-135 demonstrated superior leadership and professionalism while dealing with two potentially serious and demanding situations. This decisive and coordinated crew action prevented any loss of life and minimized physical damage to an LCF in the first instance; during the latter alert Crew R-135's alert actions prevented the shutdown of an LCC.

PROFESSIONAL PERFORMERS

FLYING CREW

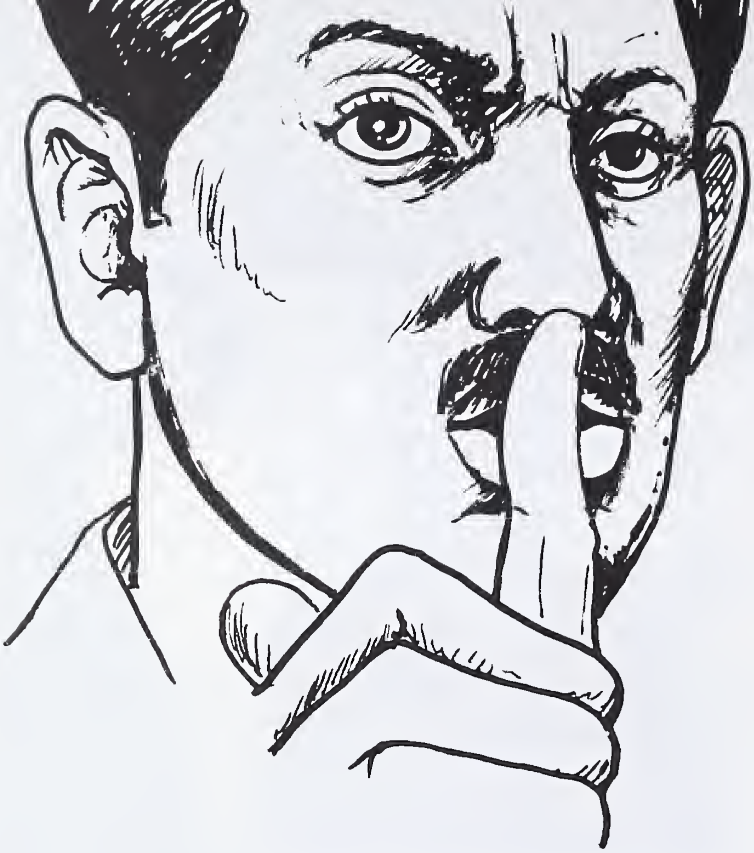
Capt Bill Maisch, AC; 1Lt Ted VanOver, CP; Capt Gary Grimes, EW; Capt Mike Patton, (not shown), RN; 1Lt Bob Bishop, N; 1Lt Stan Chase, IN; Sgt Don Leake, G; and SSgt Bob Sprague, (not shown), IG, Crew E-10, 319th BMW, are SAC's Flying Crew of the Month. After initial level off and while enroute to the air refueling track, the number one main rudder/elevator hydraulic warning light illuminated, indicating a potential flight control problem. Capt Maisch elected to abort the mission and return to the initial approach fix and enter holding to burn down fuel. At slightly over an hour into the mission, the number one auxiliary rudder/elevator warning light illuminated. With only one half of the rudder/elevator system remaining operational, and a hydraulic fluid leak in the remaining system suspected, the crew declared an emergency and prepared for a heavyweight landing. A Hotel Conference with Boeing representatives confirmed Capt Maisch's decision to land heavyweight and despite partial loss of control of the elevator and rudder, Capt Maisch made an uneventful landing. After clearing the runway, the crew shut down the engines and accomplished an emergency ground egress.

AIRCRAFT MAINTENANCE

TSgt John R. Veirs, 379th BMW, Wurtsmith AFB, is SAC Maintenance Airman of the Month. Sgt Veirs demonstrated exceptional technical ability, leadership and initiative in his duties as bombing/navigation system flight line supervisor. Because of his widely known reputation as an expert on the B-52 aircraft terrain avoidance system, he was selected to be one of three technicians involved in a critical investigative initiative on the TA system. The unmatched results of readiness exercises and higher headquarters evaluations validated Sgt Veirs' superb contributions when the wing received an Outstanding rating on the August 1982 BUY NONE exercise and his shop received an Excellent rating from the HQ SAC Logistics Readiness Team.

Missile Maintenance

SrA Ira D. Russell, 308th SMW, Little Rock AFB, is SAC ICBM Maintenance Airman of the Month. SrA Russell, a missile handling team chief, supervises extremely critical and highly technical tasks in removing, installing and mechanically repairing Titan II missiles. Safety and the political sensitivity of Titan II missiles dictate that only the most reliable and technically proficient individuals be selected for team chief duties. Selected over others more senior in rank, SrA Russell accepted this challenge willingly and the 3901st SMES evaluators subsequently labeled him as one of the best in the business.



SHHHHHHHH

CFIC CORNER

Major Casper D. Nordick,
B-52D CFIC
Carswell AFB, Texas

One of the things that has concerned us at CFIC is the apparent lack of understanding and the misconceptions associated with asymmetric flight conditions (engine out operation). Common questions asked after presenting the asymmetric thrust academic class are, *"Is this new?* Why haven't we been told this before? Am I supposed to keep this a secret?"

The information we present during the asymmetric class is not new. It has been formally presented to SAC instructor pilot candidates for at least eight years. Why hasn't the word gotten back to the pilots in the field? We don't know. Hopefully, CFIC graduates are sharing the knowledge they obtain while attending the school. However, judging from the responses we receive, the word is not getting out.

There isn't space in this article to cover all that is taught in the four plus hours of instruction we provide on asymmetrics. However, we will discuss the following areas of six engine operation.

- What does the statement *"avoid turbulent air"* mean?
- What does minimum directional control speed mean?
- What is meant by one-half lateral control authority?
- What type of problem are we trying to simulate when we practice six engine approaches, landings and go-arounds?
- When gross weight permits four engine operation, must all six operating engines be used to fly the approach, landing, or go-around?
- Should the techniques used to control the aircraft during asymmetric situations in traffic pattern operations be used during cruise situations?

Most of the rules or parameters specified in the Dash 1 and SACM 51-52, Vol VI, that govern simulated six engine maneuvers are straight forward and easily understood. One statement in the Dash 1 that is often misunderstood is *"avoid turbulent air"*. Exactly what is meant by this statement? I have acquired a few hours of flying experience during the past ten years and have never seen a sign that stated, *"Warning, turbulent air ahead"*. What our guidelines should possibly state is, *"If the air is turbulent, don't practice operations with one or more engines inoperative"*. The side loads placed on the airframe, coupled with unstable air, could cause structural damage. Another term that is often misunderstood is minimum directional control speed.

B-52 pilots are familiar with the definition of minimum directional control speed (MDCS). It is the minimum speed at which a constant heading can be maintained with (1) full rudder, (2) one-half lateral control authority and (3) a given amount of thrust. When computing MDCS, the thrust setting is based on military rated thrust (MRT). But, what is MDCS? MDCS reflects the aircraft's capability to sustain directionally controlled flight within the stated parameters of one-half lateral control authority, full rudder and with all operative engines at a given amount of thrust. It indicates aircraft performance capability only. It does not mean the airplane cannot be safely flown below MDCS nor does it mean that it can be flown safely above MDCS.

Pilots' abilities and the techniques used in controlling asymmetric flight conditions have often been the contributing factor in engine out accidents. The most common factor was misapplication of control and power inputs which increased the practical MDCS. A pilot's ability to control and understand the 16 various factors that affect pitch, yaw and roll (listed on pages 23 and 71 of Boeing's *"Time For Action")* has a large effect on the speed that the pilot can control the aircraft (practical MDCS).

The most misunderstood factor of minimum directional control speed is one-half lateral control authority. Many pilots think that one-half lateral control authority is synonymous with one-half wheel deflection. This is incorrect! In the B-52, lateral control authority versus wheel position, is dependent upon airbrake setting. Section VI of the tech order clarifies this fact. If, during asymmetric flight conditions, half-wheel deflection is used with airbrakes settings other than zero, half-lateral control is exceeded. As shown in Figure 1 ➡ airbrakes four and *one-half wheel deflection equates to 92% of lateral control authority available.*

Let's discuss the type of problem being simulated when practicing six engine approaches, landings, and go-arounds. Is it a control problem or a performance problem? Possibly, it is both. Control problems exist when the control available to fly the airplane is insufficient to counteract the asymmetric engines at high power settings. So, you could say control

HHH . . . DON'T TELL ANYONE, ESPECIALLY B-52 D/G/H PILOTS!

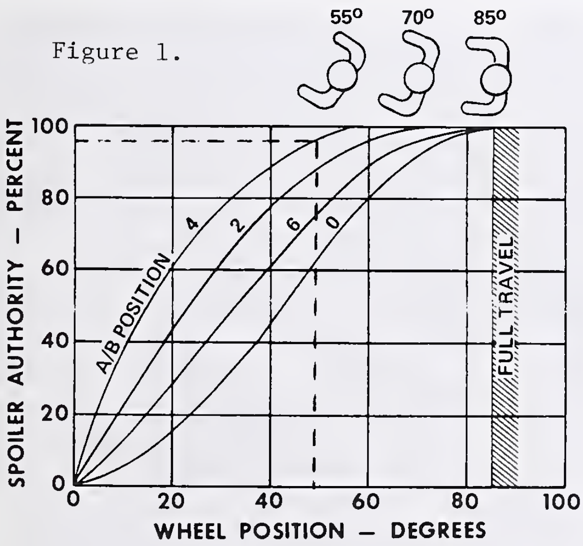
problems can be caused by the use of more power (performance) than required; simply stated *"over performance"*. This problem occurs during light weight, high thrust situations such as loss of engine(s) during taxi back takeoffs, touch and go's and/go-arounds.

Performance problems exist when the thrust available, after engine(s) loss, is insufficient to meet the thrust required to continue safe flight. This problem occurs during heavy gross weight takeoffs, climbs, and heavy weight go-arounds; it is simply lack of performance.

The key to handling a B-52 with engines shut down is the relationship between control inputs (rudder and lateral) and power inputs. Anytime during asymmetrical flight conditions that full rudder and one-half lateral control authority are reached, you have arrived at the given amount of thrust referred to in the definition of minimum directional control speed. If more asymmetric thrust is required, more lateral control will be needed to maintain directional control. Conversely, any decrease in asymmetric thrust will result in less control forces being required to maintain control. Now that we have discussed control and performance problems, let's take a look at an actual six engine maneuver.

One of the problems associated with six engine training is that we have a tendency to remove ourselves from reality. Most asymmetric thrust emergencies require that the aircraft gross weight be reduced to a minimum prior to attempting an approach and landing. The preferred technique, at light gross weights, is to retard the outboard asymmetric engines to idle and fly the approach and landing using the four inboard symmetric engines. This may go against everything you have been taught and sound blasphemous; however, it is common sense. At gross weights of 250,000 pounds or less, a B-52 with both engines in an outboard nacelle shutdown can successfully and safely accomplish an approach, landing, or go around, using only the four inboard symmetric engines. Don't give yourself an asymmetric problem unless it is absolutely necessary. The use of asymmetric engines when the additional thrust is not required only leads to aircraft control problems. The control difficulty, in turn, could possibly result in total loss of the aircraft. During your next Cockpit Procedures Trainer (CPT), fly two approaches and go-arounds. D model pilots fly the approach at a gross weight of about 250,000 pounds; G/H model pilots, use about 270,000 pounds. On the first approach, use all six engines and keep the throttles even (no staggering allowed). On the second approach, use only the four inboard symmetric engines, retard the asymmetric engine(s) to idle. Experience for yourself which technique makes the aircraft easiest to fly and determine what you might use during an actual six engine situation, gross weights permitting.

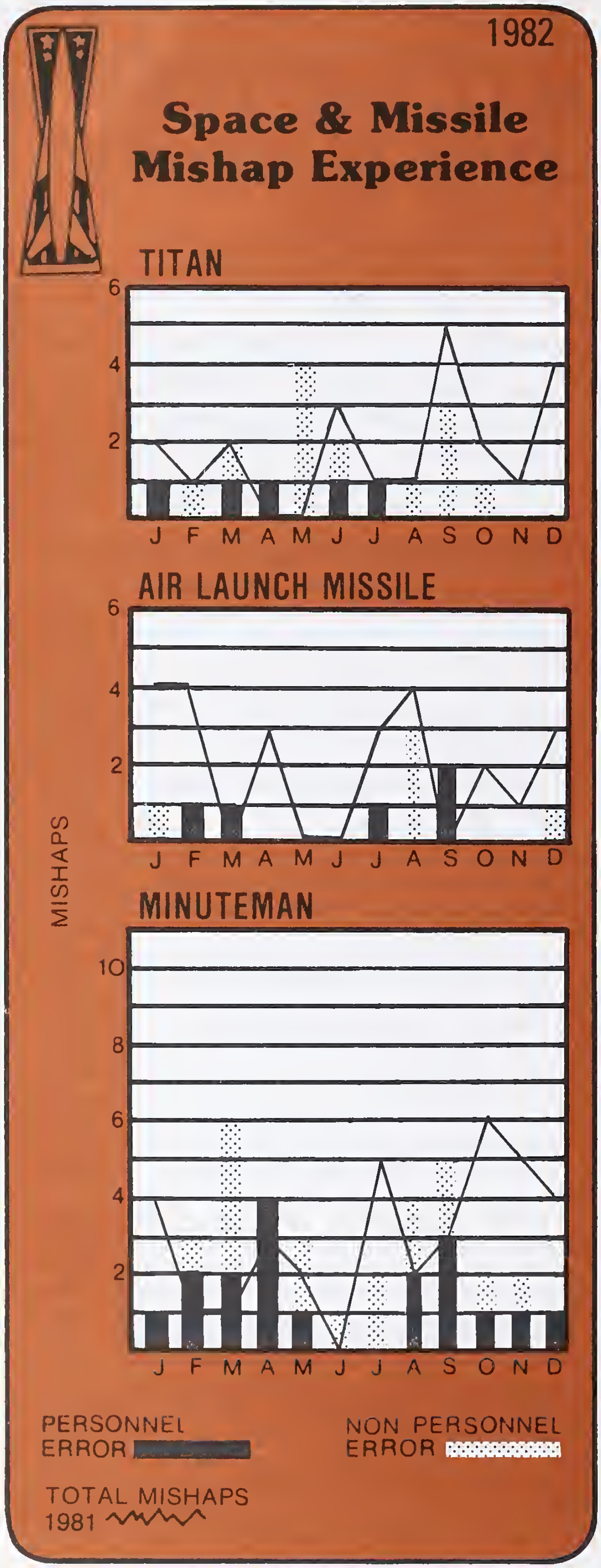
Figure 1.



SPOILER AUTHORITY WITH WHEEL POSITION

Not all asymmetric flight conditions are the same, and different techniques should be used to recover the aircraft and counteract asymmetric problems, depending on the flight condition. At cruise airspeeds, the best asymmetric thrust recovery is quite different from low airspeed situations. At cruise airspeeds, large abrupt rudder inputs, to counter the yaw and roll due to asymmetric conditions could result in critical structural loads. The following techniques are recommended for asymmetric thrust recovery during cruise flight. The resulting yaw and roll of the aircraft caused by engine loss should be countered with lateral control, followed by smooth application of rudder; then trim as required to balance control forces. If performance requirements permit, re-adjust the throttles on the asymmetric engines to minimize the asymmetric problem and control surface deflections required to overcome the asymmetric condition.

Hopefully, we've presented asymmetric conditions and reactions in a manner that can be easily understood. However, when you are simulating these conditions, it is usually easier to understand and remember the various procedures and techniques used to overcome them if you understand the reasons behind them. We practice six engine maneuvers to simulate loss of thrust and a performance problem. During actual six engine flight, at reduced gross weights, we experience control problems often caused by an "over performance" conditions created by ourselves. These control problems can be minimized by not using the asymmetric engines unless it is absolutely necessary. Remember, during in-flight emergencies, your primary job is to "fly the airplane", not to "fight it"! That should never be misunderstood.



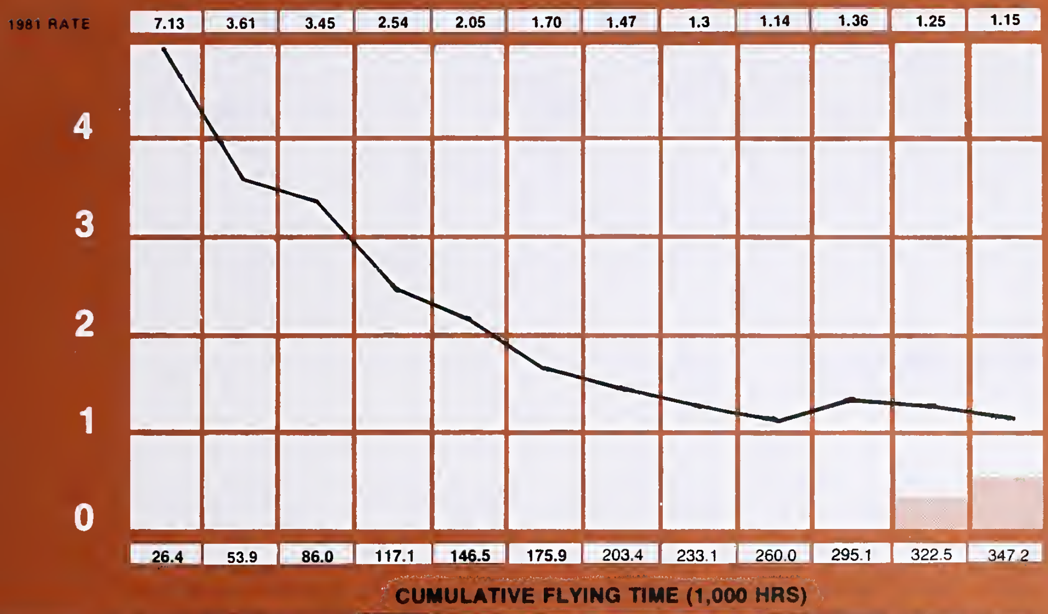
SAC Aircrew Life Support Award Winners

In a ceremony held recently at Randolph AFB, Brig Gen Edward C. Giddings, HQ ATC Deputy Chief of Staff/Operations, presented a plaque recognizing CMSgt Raymond C. Blanchette as the SAC Aircrew Life Support NCO of the Year for 1982. CMSgt Blanchette was previously stationed at Pease AFB. He has since been assigned to Randolph AFB as the ATC Command Aircrew Life Support Manager.

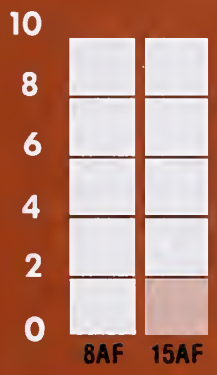
SrA Cynthia Moj has been selected as the SAC Aircrew Life Support Airman of the Year for 1982. In a ceremony at Pease AFB, Col Trevor A. Hammond, 509th BMW Commander, presents a plaque and certificate recognizing SrA Moj's outstanding achievement.

1982 Flying Safety Rate

SAC CLASS A MISHAP RATE (PER 100,000 FLYING HRS)



MISHAPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1981	2	0	1	0	0	0	0	0	0	1	0	0
1982	0	0	0	0	0	0	0	0	0	0	1	1

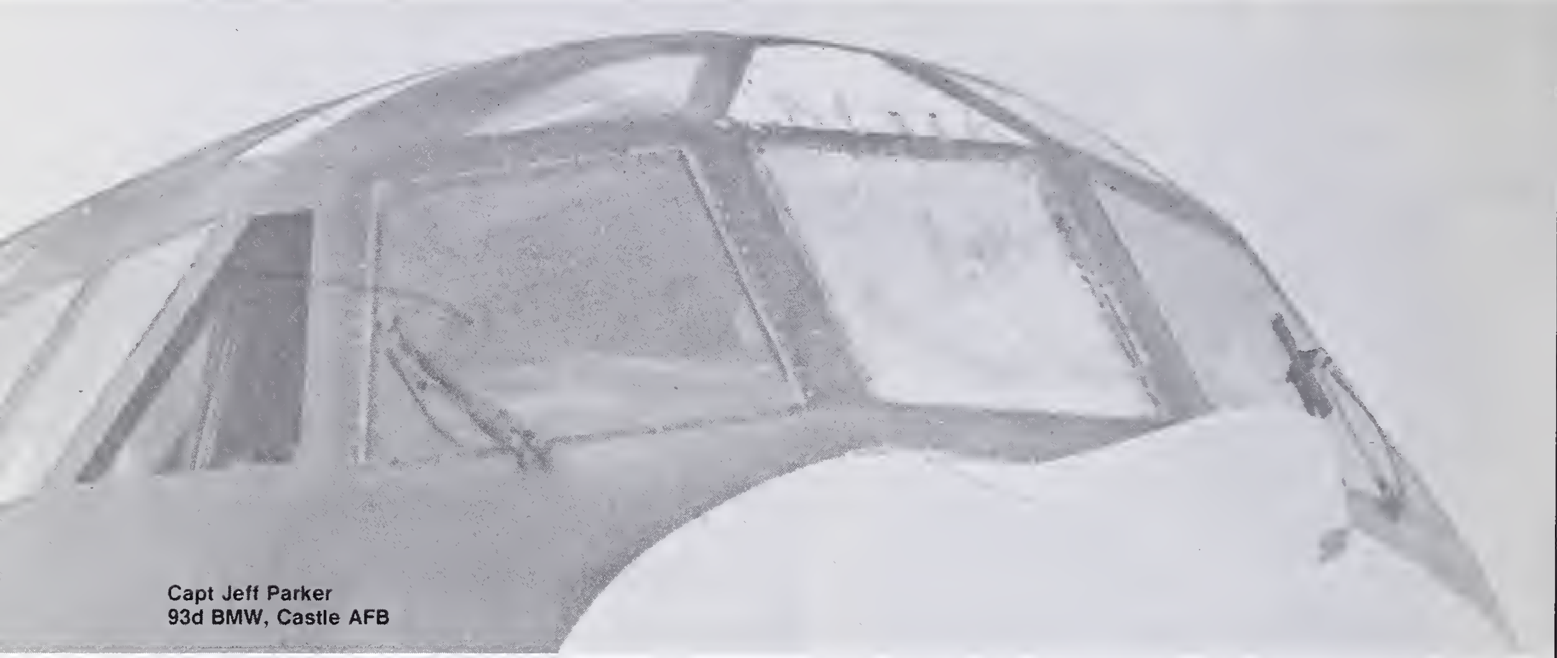


MISHAP STATUS

+KC-135A	MAR 82
+KC-135A	MAR 82
B-52G	NOV 82
B-52G	DEC 82

LEGEND ⁄\ = 1981 RATE (SAC)
+ = ANG
– = AFRES

HOW TO *'DUCK'* THE UNINVITED ARRIVAL OF A *'FOWL'* FRIEND



Capt Jeff Parker
93d BMW, Castle AFB

Yes, it did happen to me — I hate to start this out with one of those *"I never thought it would happen to me . . ."* stories — but I never thought it would.

There we were — a Castle CCTS sortie flying the STRC range for a change of scenery. An uneventful sortie until 60 TG on the first target at Douglas. With requal pilot Capt Rusty Dean and ace copilot expectant, 2Lt Steve Norris ably at the controls, and me in the IP seat, the bomb run progressed normally. Because we were on the unfamiliar STRC route, I also had a low level chart and kept it tucked between the IP seat and the right load central area. I reached down to my right to mark the chart with some visual points I'd note along the bomb run when something caught my eye. I remembered feathers, window breaking and accident reports of birdstrike injuries all at about the same time and rolled off the seat to the right as the glass showered the cockpit. *"It"* hit the number one window (the center window in the B-52) slightly to the left. The window bowed into the cockpit approximately six inches. All that held the window together was the plastic laminate material between the panes. By this time Rusty and Steve were both pulling on yoke (we were at 500′ AGL at 310 KIAS) and inquiring about my condition. I was spitting glass and after a few moments determined it was safe to look up. The cockpit looked like someone had thrown a bucket of rock salt in it — glass everywhere — flight suit pockets, oxygen mask, defensive station, etc. We climbed to a safer altitude, slowed to 240 KIAS and Steve *"got on the radio"* to ARTCC. It was obvious that we weren't going back to Castle and with Capt Ralph Mollet, the IRN directing the student navs, we headed for Ellsworth about 100 miles away. Capt Chuck Carter, the EW instructor informed *"them"* over the HF radio of our intentions. We proceeded to Ellsworth at 8000′ MSL, determined there were no controllability problems and thoroughly checked section III. By this time I was in the right seat keeping an eye on the window, Rusty was flying and Steve was back at the 10th man position rechecking section III and landing data. We reached the Ellsworth area and, because what remained of the window was holding together, burned down fuel for 45 minutes and landed at 290,000 pounds. (Of course the drag chute failed.) So, what did we learn from this experience? With minimum effort I can think of three potential lifesaving lessons. One — the time you spend as a crew during mission planning discussing low level abort procedures — who does what — when, etc, is time well spent. Two — copilot doesn't mean no pilot. Steve Norris, though new to flying, reacted accurately to a tense situation. He could have sat back and assumed the left seater would fly the aircraft, but instead, when it came down to basic flying techniques — heading, altitude and airspeed — he acted quickly and had his priorities right. Three — if my helmet visor had been up I wouldn't be flying airplanes today, not to mention even seeing them. The *"bottom line:"* Keep your visor down. In the words of those 1960s singing stars the Monkees — *"I'm a Believer."*

SAC SAFETY SCREEN

These Warriors . . . The Cutting Edge of The National Resolve

22 AREFS, March Crew R-122: FP Capt Glenn F Spears, CP 1Lt David B Guertin, NN 1Lt Thomas G Green, BO Sgt Lawrence Scotto

100 AREFW, Beale Crew E-160: P Capt David A Maude, CP 1Lt Dennis L Schoch, NN Capt Mark L Magie, BO SSgt Marvin P Surber

55 SRW, Offutt Crew: IP Maj Jim Jones, AC Maj Bob Fullenkamp, NN Capt Paul Yeoman, IFE MSgt Bob Loop, FS SSgt Mike Scammell

909 AREFS, Kadena Crew: IP Capt James C McNamara, CP 1Lt John C Davey, NN Capt Ronald S Grossman, IS TSgt Robert B Roye

307 AREFG, Travis Crew E-131: IP Capt Phillip G Steck, CP Capt Donald R Cavin, IN 1Lt Timothy W Vining, IS TSgt Randolph D Haylor

307 AREFG, Travis Crew E-111: IP Capt Billy K Osborn, CP 1Lt Gary M Schull, NN 1Lt Gregory L Hayman, IS SSgt Laroche J J Placide

307 AREFG, Travis Crew E-156: IP Capt Dale F Bible, CP 1Lt David W Lester, NN Capt Natalie E Crites, IS SSgt John E Peterson

60 BMS, Andersen Crew E-31: AC Capt James F Shanley Jr, CP 1Lt Peter J Katsufrakis, RN Capt William W Franklin, NN Capt Edward J Sweeney, EW Capt Vincent M Jenkins, AG SSgt John P Denzer

60 BMS, Andersen Crew S-02: AC Capt David E Bullock, CP Capt Richard A Ries, RN Capt Sidney T Black, NN 1Lt Thomas E Elmore, EW Capt Brian W O'Connell, AG SSgt Hulmer J Heath Jr

92 BMW, Fairchild Crew R-111: P Capt Thomas N Mouch, CP 1Lt George Hollman, N 1Lt Edward F Moses, BO SSgt Micheal D Cardina

9 BMS, Carswell Crew R-63: AC Capt Edward N McKinney, CP Capt Michael W McWilliams, RN Capt Richard E Parraut Jr, N Capt Steve H Duker, EWO Capt David W Landry, G Sgt Victor E Roberts

20 BMS, Carswell Crew R-31: AC Lt Col Walter B Carpeaux, CP 1Lt Keith D Schultz, N 2Lt Berry T Sandlin, RN Capt Darwin W Ray, EWO Capt Daniel E Meeks, G Sgt Robert W Galey

4018 CCTS, Carswell Crew IT 1: IP Capt Raymond A Ortiz, IRN Capt Troy Jordan, IEWO Capt Lee R Heitman Jr, IG TSgt William O Miles

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system *IAW AFR 127-2/SS1.*

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